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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/615,971	07/14/2000	Hai Tao	SAR 13476	6542

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EXAMINER

NAKHJAVAN, SHERVIN K

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/615,971

Applicant(s)

TAO ET AL.

Examiner

Shervin Nakhjavan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,8-14,16 and 18 is/are rejected.
- 7) ☒ Claim(s) 5-7,15 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10 and 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claims 10 and 16, citations "said object configuration" and "said percentage determining step", respectively, seem to be referring to a previously cited object configuration or a step which does not appear in the claims. It seems that the claim 16 should be dependent from claim 15.

***Minor Informality***

1. Claims 6, 7, 16 and 17 should end with a period. Appropriate grammatical correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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3. Claims 1-4, 8-14 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Brill et al. (US 6,542,621).

Regarding claims 1-18, Brill teaches, limitation of claim 1, a method for tracking multiple objects in a video sequence comprising: selecting an initial configuration comprising a plurality of objects (Column 2, Lines 49-52, where the selection configuration is selecting a camera and its corresponding region of interest for tracking of plurality of objects or people according to Column 2, Lines 6-9, in addition tracking of multiple people is a configuration selection even if there is only one mode of tracking); predicting a current configuration (Column 6, Lines 51-55, where the predictive probability is the prediction of the current or an instant object position with respect to data from previous video images of the object); and computing a likelihood for the current configuration (Column 6, Line 60 through Column 7, Line 1, where prior prediction and current image are used for likelihood or probability computation of the posterior state which is also the current configuration and updating the new location);

limitation of claim 2, said predicting step comprises performing an object level prediction (Column 6, Lines 55-60, where the object type is considered in the process);

limitation of claim 3, said prediction step comprises performing a configuration level prediction (Column 10, Lines 12-18, where prediction and probability computation is inherently partly based on a threshold level i.e. 0.50);

limitation of claim 4, said configuration level prediction handles object addition and deletion from a current configuration (Column 9, Lines 47-55, where persons are added and deleted according to posterior or updated current states or evaluation);

limitation of claim 8, multiple objects in a video sequence are represented by said configuration comprising a plurality of modeled objects (Column 6, Lines 55-60, where configuration is tracking of multiple objects and objects are represented by multiple models);

limitation of claim 9, a method of producing probability distributions of states for multiple objects in a video sequence comprising: performing hierarchical sampling of at least one frame of video in said video sequence, wherein said sampling is performed in an object configuration and individual object states; and repeating said sampling for each frame in said video sequence to track objects within the video sequence (Column 8, Lines 34-38, where each frame is sampled and the specific object model is tracked according to the model's pixel distribution computation);

limitation of claim 10, said object configuration represents a plurality of objects within a scene (Column 2, Lines 14-17);

limitations of programming claims 11-14 and 18 corresponding to method claims 1-4 and 8, respectively, are inherently taught throughout the teachings of instruction for processing images in the computer system of figure 1, (i.e. Column 7, Lines 1-15).

#### ***Prior art***

4. The prior art cited by applicant, "An Efficient Implementation of Reid's Multiple Hypothesis Tracking Algorithm and Its Evaluation for the Purpose of Visual Tracking" and "An Algorithm for Tracking Multiple Target" are both applicable as 102 (b) references to claims 1, 9 and 11, since the authors clearly discuss configuration type as

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the kind of tracking (i.e. known targets, false targets, etc.) and predicting of current states by hypothesis of current states by taking into account the history of the models and likeliness computations by probability computations of the past hypothesis corresponding to present or current configurations or states.

***Allowable Subject Matter***

5. Claims 5-7, 15 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record specifically Brill et al. does not teach maximizing the percentage and minimizing the number to identify an optimal current configuration of claims 1 and 11, combined with other features and elements of the claims.

***Other prior art cited***

6. Prior art of record cited and not relied upon is considered pertinent to applicant's disclosure.

The US Patent 6,031,568; US Patent 5,761,326; US Patent 5,631,653 and US Patent 5,406,289 are related to applicant's invention as claimed.

***Contact information***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shervin Nakhjavan whose telephone number is (703) 306-5916. The examiner can normally be reached on Monday through Friday from 8:00

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am to 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

**Any response to this action should be mailed to:**

Assistant Commissioner for Patents  
Washington, DC 20231

**Or faxed to:**

(703) 872-9314 for **formal** communications, please mark "**EXPEDITED PROCEDURE**"

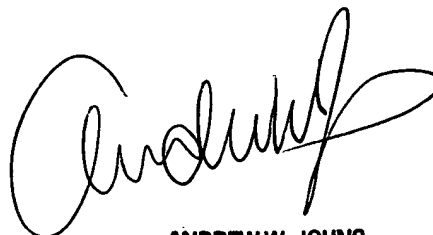
**or:**

for **informal** or **draft** communications; please label "**PROPOSED**" or "**DRAFT**".

**Hand delivered responses** should be brought to Crystal Park 2, 2121 Crystal drive, Arlington, VA, sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Tech center 2700 customer service office **(703) 306-0377**.

Shervin Nakhjavan S.N  
Patent Examiner  
Group Art Unit 2621  
June 12, 2003.



**ANDREW W. JOHNS  
PRIMARY EXAMINER**